ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Advanced Television Systems	)	
and Their Impact upon the	)	MM Docket No. 87-268
Existing Television Broadcast	)	
Service	)	

PETITION FOR RECONSIDERATION OF LMCC

The Land Mobile Communications Council (LMCC) submits the following limited Petition for Reconsideration to the Commission's Sixth Report and Order in the above-referenced proceeding. That Report and Order (R&O) adopted a channel allotment plan for the introduction of over-the-air terrestrial digital television service (DTV). As part of that plan, the Commission designated TV channel 69 as the DTV allotment for station KRCA-TV in Riverside, California. LMCC is concerned that allotment, if implemented, would cause harmful interference to existing Los Angeles area public safety, private and SMR systems operating in portions of the 806-821/851-866 MHz band. This allotment and others within channels 60-69 also may hamper near-term recovery of spectrum at 746-806 MHz (TV channels 60-69) for use in the in the Los Angeles area. Therefore, LMCC urges the Commission to designate alternative allotments which have no potential to impact either existing mobile operations or near-term spectrum recovery efforts. In this regard, LMCC sets forth several recommendations for further study by the Commission and broadcasters in the Los Angeles market.

I. LMCC Interest

LMCC is a non-profit association of organizations representing virtually all users of land mobile radio and providers of land mobile services and equipment. LMCC acts on behalf of the vast majority of public safety, business, industrial, private, common carrier, and land transportation radio users, as well as a diversity of land mobile service providers and equipment manufacturers. LMCC's membership includes the following organizations:

- American Association of State Highway and Transportation Officials (AASHTO)
- American Automobile Association (AAA)
- American Mobile Telecommunications Association (AMTA)
- American Petroleum Institute (API)
- American Trucking Associations, Inc. (ATA)
- Association of American Railroads (AAR)
- Association of Public Safety Communications Officials-International, Inc. (APCO)
- Cellular Telecommunications Industry Association (CTIA)
- Central Station Alarm Association (CSAA)
- Forest Industries Telecommunications
- Forestry-Conservation Communications Association (FCCA)
- Industrial Telecommunications Association, Inc. (ITA)
- Intelligent Transportation Society of America (ITSA)
- International Association of Fire Chiefs (IAFC)
- International Association of Fish and Wildlife Agencies (IAFWA)
- International Municipal Signal Association (IMSA)
- International Taxicab and Livery Association (ITLA)
- Manufacturers Radio Frequency Advisory Committee (MRFAC)
- National Association of State Foresters (NASF)
- Personal Communications Industry Association (PCIA)
- Telecommunications Industry Association (TIA)
- UTC, The Telecommunications Association (UTC)

II. Use of Channel 69 for DTV is Likely to Cause Harmful Interference to Mobile Operations

As the Commission is aware, there is a history of interference to land mobile stations operating in portions of the 470 MHz and 806 MHz bands caused by relatively high power, full service television stations operating on UHF TV channels 14 and 69 adjacent to those bands.[1] The Commission has recognized that, in general, such interference can be eliminated by physical separation of the TV transmitters and the land mobile receivers, or by providing adequate frequency separation between the two.[2] Historically, the Commission also generally counseled new land mobile or UHF stations to eliminate or minimize interference to existing stations by using technical alternatives such as vertical isolation, cross-polarization isolation, and filtering. In addition, the Commission encouraged stations experiencing cross-service interference to negotiate and reach an accommodation satisfactory to all affected parties.[3]

A case involving interference caused by TV channel 69 in Atlanta, Georgia, to nearby land mobile licensees caused the Commission to examine this issue in detail.[4] That case concerned a construction permit granted to TV station WVEU authorizing it to move its transmitter to a site on top of the Peachtree Plaza Hotel, where several land mobile stations were already located. When station WVEU began program tests, adjacent-band

---

1 Resolution of Interference Between UHF Channels 14 and 69 and Adjacent Channel Land Mobile Operations, MM Docket No. 87-465, 6 FCC Rcd 5148, 5151 (1991) (Report and Order) [hereinafter *Channels 14 and 69/Land Mobile Report and Order*].

2 *Id.*

3 Although the Commission's policy was couched in mutual terms, the agency has stated that "land mobile to television interference . . . does not appear to be a significant problem . . . ." *Channels 14 and 69/Land Mobile NPRM*, 2 FCC Rcd at 7331.

land mobile licensees experienced objectionable interference which was caused by the close proximity of the TV transmitter and the receivers of the land mobile base stations, and the high power of the TV operation relative to the low power of the land mobile operations. Although station WVEU employed a variety of technical solutions, including the use of filters, modifications to its transmitter, and shielding of the two-way land mobile receivers, the interference persisted even at 6% of full power.

Finally, an agreement by the parties was reached in which station WVEU agreed to bear the cost of moving to higher frequencies those land mobile operations that accepted the offer by a certain deadline. No further complaints occurred, but this action essentially removed a portion of the land mobile spectrum from use.

In October of 1987, the Commission adopted the Notice of Proposed Rule Making/Notice of Inquiry in MM Docket No. 87-336 soliciting comment on various proposals for amending Part 73 of the Rules to address the problem of interference between TV operations on channels 14 and 69 and adjacent-frequency land mobile stations.[5] On July 30, 1991, after consideration of the comments and reply comments filed in response to that Notice, the Commission adopted a Report and Order amending Part 73 to state clearly the responsibilities of TV stations operating on channels 14 and 69 to land mobile operations on adjacent spectrum from interference.[6]

The rule changes adopted in the Report and Order, codified at 47 C.F.R. § 73.687(e)(3) and (4), remain in effect today. Section 73.687(e)(3) states that TV broadcast stations operating on channel 14 or 69 "must take special precautions to avoid interference to adjacent spectrum land mobile radio service facilities." This rule further

---

4 Broadcast Corp. of Georgia (WVEU-TV), 96 F.C.C. 2d 901 (1984).

5 *Channels 14 and 69/Land Mobile NPRM*, 2 FCC Rcd at 7328.

requires that, "where a TV broadcast station is authorized and operating prior to the authorization and operation of the land mobile facility, a channel 14 station must attenuate its emissions within the frequency range 467 to 470 MHz and a channel 69 station must attenuate its emission within the frequency range 806 to 809 MHz if necessary to permit reasonable use of the adjacent frequencies by land mobile licensees."

Section 73.687(4) imposes certain obligations on permittees authorized to construct a new station on TV channel 14 or TV channel 69 and to licensees authorized to change the channel of an existing station to channel 14 or channel 69, to increase the effective radiated power (ERP), including any change in directional antenna characteristics that results in an increase in ERP in any direction, or to change the transmitting location of an existing station. Section 73.687(4)(ii) requires affected TV stations to "take steps before construction to identify potential interference to normal land mobile operation that could be caused by TV emissions outside the authorized channel, land mobile receiver desensitization, or intermodulation." The rule requires these entities to install filters and take other precautions as needed and submit evidence that no interference is being caused before it will be allowed to commence automatic program tests pursuant to Section 73.1620 or commence operation with modified facilities pursuant to Section 73.1615.

---

6 *Channels 14 and 69/Land Mobile Report and Order*, 6 FCC Rcd at 5153-54.

In addition, Section 73.687(e)(4)(ii) requires affected TV stations to reduce their emissions within the land mobile channel of a protected land mobile facility[7] that is receiving interference caused by the TV emission producing a vertically polarized signal and a field strength in excess of 17 dBu at the land mobile receiver site on the land mobile frequency. If measurement of the TV channel's out-of-band emission is needed, the rule requires the measurement to be taken by equipment set to a measurement bandwidth equal to that of the applicable land mobile channel. The Commission considers a TV station responsible for correcting a desensitization problem if its occurrence can be linked directly to the start of the TV operation and the land mobile station is using facilities with typical desensitization rejection characteristics. The TV station is also responsible for identifying the source of any intermodulation product created when operation begins and, if the source is under its control, must correct the problem. If the source is beyond the TV station's control, it must cooperate in the resolution of the problem and should provide technical assistance if possible.[8]

---

[7] Section 73.687(e)(i) defines a "protected land mobile facility" as a receiver intended to receive transmissions from licensed land mobile stations within the frequency band below 470 MHz (as relates to channel 14) or above 806 MHz (as relates to channel 69), and is associated with one or more land mobile stations for which a license has been issued by the FCC or a proper application has been received prior to the date of the filing of the TV construction permit application. This section further states that a land mobile facility will not be protected if is proposed in an application that is denied and no longer subject to FCC review or if it does not commence operation within the time permitted under Part 90.

[8] The Commission's Report and Order indicates that the TV station is not responsible for bringing a poor quality land mobile station up to the industry's normal performance level or for protecting a facility attempting service well beyond a normal distance if an extremely sensitive receiver, a high gain antenna, or other special components cause the land mobile station to be more susceptible to desensitization interference. *Channels 14 and 69/Land Mobile Report and Order,* 6 FCC Rcd at 5154.

Given this history and the comments of the land mobile community on the proposed draft DTV allotment plan, in its Sixth Report and Order the Commission recognized that proper spacing is necessary to prevent interference to land mobile systems operating on spectrum adjacent to channels allotted for digital television. Signifying the importance of this issue, the Commission devoted 14 paragraphs of discussion to its resolution in the allotment plan decision. Based on the extensive comments of LMCC and others in the mobile community, the Commission modified the allotment table to eliminate many of the shortspaced draft allotments which had been set forth in the Sixth Notice of Proposed Rulemaking. These allotments otherwise would have caused harmful interference to land mobile operations sharing the use of spectrum at 470-512 MHz (TV channels 14-20) in certain top urban areas.

The Commission noted that most allotments for DTV stations will be spaced at least 176 km (110 miles) from the center city coordinates of adjacent channel land mobile operations in the 470-512 MHz band.[9] There were a few situations where such spacings were not maintained. Even then, the Commission worked to ensure there will be no instances of spacings between DTV and land mobile on adjacent channels less than 10 miles that were of major concern to land mobile commenters. [10]

LMCC fully appreciates the efforts of the Commission and its staff in the Office of Engineering and Technology who worked diligently to minimize potential adjacent channel interference to land mobile operations at 470-512 MHz. An additional effort now needs to be made to eliminate the harmful interference potential to land mobile systems in the 806 MHz band which would result from allotment of channel 69 in the Los Angeles area.

[9] Sixth Report and Order at para. 163.

[10] Sixth Report and Order at para. 164.

The allotment of channel 69 to KRCA-TV in Riverside potentially impacts land mobile operations in portions of the 806-821/851-866 MHz band. Specifically, channel 69 operation could be expected to place a strong interfering signal into base station receivers operating adjacent to the DTV band edge. Particularly in the Los Angeles area, these base station receivers are often at tower and building sites with excellent effective antenna heights. There will be virtually no isolation, except free space loss, between an adjacent channel DTV allotment and the existing land mobile base station receivers near the band edge.

Examination of licensing data shows a number of facilities in close proximity to television station KRCA. For example, Los Angeles County operates public safety facilities only 0.3 mile away from KRCA's current site and only 0.6875 MHz removed from the TV 69 upper band edge. Clearly, this situation is extremely shortspaced with respect to the 110 mile adjacent channel spacing the Commission sought. [11] Further, it is even well short of the 10 mile criteria the Commission absolutely applied at 470-512 MHz in modifying its draft allotment plan. Accordingly, LMCC believes operation of station KRCA-TV on channel 69 in Los Angeles will cause harmful interference to land mobile operations on the 806/851 MHz band channels.

[11] A spacing of 110 miles between the DTV allotment and the city center of adjacent land mobile operations would routinely provide a minimum spacing of 60 miles between a DTV station and an actual land mobile base site, given that such base sites may locate up to 50 miles from the city center.

III. Impact on Spectrum Recovery

In its Sixth Report and Order, the Commission set forth its intention to recover spectrum at 746-806 MHz (TV channels 60-69) in the near term. Within the television allocation, these upper channels are the least desirable for television use as propagation conditions make audience coverage and advertising revenues more difficult to attain. This spectrum, however, is very desirable for mobile use as it is directly adjacent to the 806-821/851-866 MHz band currently used by public safety, other private land mobile radio users and Specialized Mobile Radio (SMR) systems. LMCC therefore fully supports the Commission plan for early recovery of the 746-806 MHz band.

During the transition period before analog TV operation is ceased, new users of the recovered 746-806 MHz band may have to co-exist with 97 incumbent analog TV stations in that band. Unfortunately, the Commission's allotment plan also places 15 DTV allotments within that spectrum. Alternative solutions for the 15 stations whose DTV allotments fall within channels 60-69 could benefit broadcasters as well as public safety and other mobile users who may be provided access to the 746-806 MHz band. LMCC therefore urges the Commission to re-examine whether alternative solutions exist.

IV. Potential Solutions to Avoid Interference and Enhance Spectrum Recovery

Preliminary analysis conducted by Motorola, Inc. for LMCC indicates several possible options for the Los Angeles area which deserve further study and consideration by the Commission and broadcasters in that market. Previously, the broadcast community has noted the importance it places on co-locating adjacent channel DTV allotments and NTSC operations. Co-location takes advantage of the adjacent channel rejection inherent in television receivers to help prevent interference. If adjacent channel DTV and NTSC signals emanate from widely spaced locations, the receiver adjacent channel rejection may be less likely to prevent interference to some viewers, as the relative strength of the undesired signal could be too strong for a given TV set to reject. In developing its final allotment plan, the Commission therefore placed some priority on co-locating adjacent DTV and NTSC allotments.

Unfortunately, it appears that VHF channel 12 may have been rejected as a potential DTV allotment on Mt. Wilson because the sites examined by the Commission's computer program, while on Mt. Wilson, were not exactly co-located. Motorola believes that sites several hundred meters apart, however, are essentially co-located from the standpoint of TV receivers in Los Angeles served by Mt. Wilson transmitter sites. Therefore, VHF stations KTLA(5) , KTTV(11) or KCOP(13) on Mt. Wilson appear to each be potential candidates for a channel 12 DTV allotment instead of DTV allotments on channel 68, 65, and 66, respectively as assigned in the Commission's plan. This in turn may open up one of those allotments for use by station KRCA in Riverside, CA on Sunset Peak, avoiding the potential interference to existing 806-821/851-866 MHz land mobile operations.

TV channel 55 may also provide a substitute DTV allotment which KRCA-TV in Riverside, CA may find preferable to channel 69. LMCC notes that some power reduction by KRCA may be necessary to accommodate shortspaced TV-to-TV situations which would occur from this allotment as channel 55 is assigned for use in San Diego. However, LMCC also notes that channel 69, the Commission's DTV allotment for KRCA, is also used in San Diego by station KSWB-TV. Therefore, it is not readily apparent why channel 55 may not be a possible substitute allotment for station KRCA, even though it is assigned in San Diego. LMCC believes the potential for interference, especially to public safety communications, and the potential benefits for spectrum recovery at 746-806 MHz warrants further review of these potential options which may have been initially rejected.

To the extent an alternative allotment cannot be found, LMCC requests that the Commission reaffirm that TV station KRCA, and other stations allotted on channels adjacent to existing land mobile operations, would bear the responsibility to ensure that no harmful interference occurs to land mobile systems as a result of their DTV operations. Further, given the congested nature of land mobile spectrum in the Los Angeles area, LMCC does not view defacto removal of land mobile channels adjacent to TV channel 69 from operation as an acceptable option KCRA can take to discharge these responsibilities.

Ideally, additional re-examination of some of the allotments originally rejected may even find alternatives that further reduce or even eliminate DTV allotments within 746-806 MHz in Los Angeles and other areas, without incurring potential interference to existing land mobile operations. For example, LMCC recommends that the Commission and station KTNC (42) in Concord, CA may find it beneficial to conduct a more detailed engineering examination on the possible use of channel 51 for DTV instead of channel 63 as the Commission assigned. It is our understanding that channel 51 may meet the routine spacings used, but was rejected because initial Longley-Rice interference analysis

indicates potential co-channel problems with station KNSO (51) in Merced, CA. While not assured, further analysis may open up the possibility for station KTNC to obtain a DTV channel lower in the band, leading to more economical operation.

VI. Summary

LMCC supports the modifications made to the draft DTV allotment plan to minimize interference to existing land mobile operations in the 470-512 MHz band. LMCC encourages the Commission to re-examine DTV allotments within channels 60-69 to minimize potential interference to land mobile operations at 806-821/851-866 MHz as well. In addition, finding alternative allotments should assist the Commission in recovering spectrum at 746-806 MHz for other uses.

Larry Miller /sm

Larry Miller, President
Land Mobile Communications Council

Mark Crosby /sm

Mark Crosby, Secretary-Treasurer
Land Mobile Communications Council

June 13, 1997